APPLIED SCIENCE.

THE INCUBATOR FOR HATCHING OSTRICH EGGS.—A practical application of the "Incubator" has lately been made to the hatching of ostrich eggs at the Cape of Good Hope, and with the most satisfactory results. In the establishment at Hilton, 75 chickens have been already hatched this season; the total number reared there since its inception amounting to 155. Of 45 eggs placed in the apparatus at one time, it is thought that 42 will produce healthy chickens.

EFFECT OF SUNLIGHT ON FLOUR.—It is maintained that the inferior quality of certain kinds of wheat and rye flour is frequently due to the action of sunlight on the flour; even when in bags or barrels the gluten experiences a change similar to that occasioned by heating in the mill. The tendency thus imparted to it, to become lumpy, and to form dough without toughness, is similar to that of flour from moist grain, or of flour when it is too fresh, or made from grain ground too early, or when adulterated with cheaper barley meal. Such flour can be improved by keeping for some weeks.

PROTECTING VINEYARDS BY ARTIFICIAL CLOUDS.—The idea was suggested, not long since, of protecting the vineyards of France during critical periods of cold by the formation of artificial clouds that should prevent excessive radiation from the soil, and the experiment was recently tried at Suresnes. In a vineyard of about 50 acres there were placed 360 iron vessels containing a heavy oil. All these being lighted at once, a thick black cloud was soon interposed between the vines and the sky. During clear and calm weather these clouds remain in place, and thus perfectly answer the purpose. The expense of this operation, including pots, oil, and labor, was estimated at about 40 cents per acre, and those who witnessed the experiment were assured of its value and its practical availability.

CULTIVATION OF FISH IN DITCHES AND PONDS.—Much attention is now being paid in Germany to the cultivation of fish in ponds and ditches, and it has been found, contrary to the generally received opinion in reference to such localities, that they are more favorable for the purpose than other large bodies of water, apparently fresh and pure in their character. This is doubtless owing to the great abundance of animal life, as well as to the more decided concentration of vegetable substances in the form of living plants of different kinds, including the algæ. This produces a constant evolution of oxygen needed for the respiration of the fish, and allows a larger mass of life to be crowded together in a given space. The reproduction of the species is also unusually rapid, and the young grow very quickly.

DISCOVERY OF TIN IN AUSTRALIA.—One of the most important discoveries in Economic Geology made during the past year is that of tin in Australia. Tin has been met with heretofore in Australia, but the recent discoveries indicate far richer deposits than any before known there. The district in which the metal was found is along the valley of the MacIntyre River, on the high plateau of the Australian Alps. The ore occurs, as usual, in granite, and so disseminated as to form a kind of stockwork. The overlying surface deposits contain large quantities of oxide of tin, and it is probable that a very large amount of ore will be obtained from the diggings or washings. In a series of trials recently made, 20 pounds of detritus was found to yield from three ounces to two pounds of ore. The tin-bearing belt is known to have more than 150 miles of linear extent, so that these new mines may in time become quite as productive as those of Banca or Cornwall.

PROPER COMBINATIONS IN SOAPS.—According to Mignot, a perfect soap is one in which the fatty matters and the alkaline have been so thoroughly combined as to leave no excess of either component; a desideratum which is very seldom reached, as the soap is either too alkaline, in which case it parches and dries up the skin, or it is too fat, and thus makes the skin greasy, so that the dust readily adheres to it. The former inconvenience is the more serious of the two, as it very soon leaves its impress upon the skin. For this reason soap-makers are in the habit of employing an excess of fat, notwithstanding the inconvenience mentioned. Mignot now informs us that silica introduced into the soap, in the form of infusorial earth, will tend to neutralize any excess of the alkaline elements of the soap, as it is soluble both in soda and in potash, and it will at the same time take up the surplus of fatty matter by absorbing it, and combining with it to a certain extent. Infusorial earth, as is well known, occurs in different parts of the world in great quantity, and immense deposits are known in various portions of the United States, especially in Idaho, Nevada, and California.

IMPROVEMENTS IN GLASS-SPINNING.—Recent improvements in glass-spinning by Brunfaut, as set forth in a communication of Prof. Herrmann, promise to develop a new branch of industry. Prolonged experiments led to the discovery of a compound which affords threads surpassing in fineness even the single cocoon fibers, and apparently as soft and elastic as silk. This substance has been applied to a variety of uses, but on account of the skill required in the workman, and the fatiguing character of the labor, especially to the eyes, the articles may as yet be classed as curiosities. When felted, it forms excellent material for chemical filters. It is adapted to figures for brocades, &c., and to the manufacture of clothing, ornaments, furniture covers, curtains, carpets, lace, collars, &c., and can be used in knitting and embroidering. In softness, the articles approach silk, and feel like the finest woolen, while they are warmer than the latter and exceedingly light. They are comparatively free from mechanical wear, and are not affected by light, heat, moisture, nor acids, and, by reason of their incombustibility, are peculiarly adapted to ladies' garments. The annexed prices of a few articles will indicate the present stage of the manufacture: Cuffs, $1 15; collars 50 cents to $2 50; watch-chains, 25 cents to $1; ladies' hats, complete, $4 75 to $26.

FOOD FOR DIMINUTIVE TROUT.—For a long time a special object with trout-breeders has been to obtain living organisms of sufficient minuteness to answer the purpose of food for the fry, especially during the period which intervenes between the absorption of the yolk sac and the age of about four months, after which they are more able to care for themselves. The material generally employed in fish-hatching establishments has been chopped meat, liver, muscular fiber, or other substances, which, when supplied in small inclosures, is very apt to produce foulness of the water, resulting in the sickness or death of the fish. Even under the most favorable circumstances the minute fresh-water crustaceans of the genera *Daphnia*, *Cyclops*, &c., are scarcely produced in numbers sufficient for the object desired.

Mr. Frederick Mather, a practical trout-breeder, of Honeoye Falls, N. Y., now proposes to use the larvæ of the common musketo, as answering this purpose better than almost anything else, as they remain alive until hatched, and in their different stages are admirably adapted to the wants of the trout. He estimates that about two barrels of rain-water will be required for each thousand fry, the insects to be strained out from time to time as fast as they are developed and thrown into the trout pond. The young fry take this food with great avidity, and seem to thrive admirably upon it.

HARDENING OF DRIED PEAS IN BOILING.—While some peas become soft in boiling, others become horny and hard, and it has been a question whether this is due to the peas or to the water. Prof. Ritthausen examined two samples of peas, one said to become soft on boiling, and the other hard, and on boiling them in distilled water found these characters substantiated. The analysis of their ashes gave:

	Soft.		Hard.	
Phosphate of lime	10.77	18.91	10.41	26.96
Phosphate of magnesia	8.14		16.55	
Phosphate of potassa	59.74		37.43	
Sulphate of potassa	8.10		14.80	
Chloride of potassium	4.72		6.23	
Potash	....		11.47	
Phosphoric acid	4.43		....	

From this we see that the soft-boiling peas contain a considerably greater amount of phosphate of potassa, a smaller percentage of phosphatic earths, and more phosphoric acid than the other kind, which, for their part, are richer in the earth-phosphates, poorer in other phosphoric compounds, and contain an excess of potash.

In the action of water on those peas poor in phosphoric acid, that harden on boiling, the legumine, which is present in large quantity, although partially combined with the excess of potash, has also its function. It is decomposed, with the separation of a compound of lime or magnesia, which becomes horny on heating, and brings about the hardening referred to. Cold water extracts from the meal of those peas that boil soft, 4.34 per cent of soluble legumine, while from the hard-boiling kinds only 1.78 per cent can be derived. The difference in the amounts of nitrogen and sulphur was so slight, that the hardening could not be ascribed either to a larger amount of albumen, or of sulphuric acid. Some kinds of peas, however, represented as hardening on boiling, softened when boiled in distilled water; and analysis of their ashes gave nearly the same results as with those of the other character.

THE PHYLLOXERA SCOURGE.—The subject of the ravages of the Phylloxera, or grapevine louse insect, continues to occupy the minds of vine-culturists in France, although the Winter season has not been favorable to the prosecution of many experiments. Mr. Faucon, who has been among the more diligent investigators into the natural history of this insect, reports that he has not lost sight of it for any moment, but has made repeated examinations of the roots of the vines as well as the plant itself, and has satisfied himself that the excessive rains have caused the death of a great many of the insects; and that this will always take place whenever the submersion of the roots of the vine is complete for a sufficient length of time, or else when the rains are capable of producing a corresponding effect. The dead insects preserve their shape and natural color in Winter for a long time, if protected from contact with the atmosphere; but as soon as exposed they dry up, and the color becomes a dark brown or black. It requires, therefore, a very practiced eye to distinguish the dead insects from those which are only hibernating, this sometimes being impossible even by the aid of the lens.

STEAM AS A FIRE-EXTINGUISHER.—Dr. Weidenbusch of Wiesbaden highly recommends steam as a fire-extinguisher, and suggests experiments as to the best method of employing it, as well by the use of portable boilers (where the connecting pipes would produce the chief difficulty) as by pipes and boilers arranged for each building. As an illustration of its efficiency, he gives the case of a factory about 196 feet long and 33 feet wide, the garret of which was filled with rags, shavings, leather-scraps, &c., in which, when the fire was detected, half the length of the roof was burning. The fire apparatus arrived about an hour afterward, and the extinguishing appliances of the building itself were so defective that the whole roof was in flames and had fallen in, and the lower story was on fire in different places. About 2¼ hours after the outbreak of the fire a steam boiler, separate from the building, and not in use for some hours, was fired up with wood, and the cast-iron pipes were cut by a daring carpenter who entered a room of the burning building. The effect was instantaneous. The room, filled with the steam issuing under high pressure, (which, however, he does not consider essential), soon darkened, one portion after another ceased to burn, even the heaps of rags on the garret, with free access of air, were gradually extinguished, and after half an hour all danger was regarded as past. The effect was too marked to be ascribed to the fire-engines operating during the same time, and the firemen were more and more impressed with the fact that their labor was superfluous as the steam came into play.

FISHERY LAWS IN GERMANY.—A committee of the German Parliament, in connection with one from the Deutsche Fisherei-Verein, is engaged in preparing the draft for a new law of the Empire, for the protection of the fish and fisheries, more especially those of the inland waters. Although the details have not yet been completed, it has been decided that for the protection of the fish there shall be both the so-called "Close Time" (or a period during which no fishing is allowed), and also close ranges, or stretches, which, as being specially occupied by breeding fish, shall not be disturbed, at all, during at least two months of the year. The absolute prohibition of the fisheries during certain seasons, excepting on the actual breeding grounds of the fish, is not considered expedient, as the result would be to cause great distress among the fishermen, and, indeed, to drive them to other occupations; since, with their usually very small profits, they would not have the capital to enable them to lie idle during a lengthened period. It is probable that a special committee will be ordered to examine the waters of the Empire critically, and to decide in which fishing shall be absolutely prohibited, and those in which it can be freely allowed under proper restrictions and with proper apparatus, at all times excepting the close period. The close season will, of course, vary with the species; thus that for the trout and salmon will be in the Autumn, just before the spawning season begins, and that for grayling and other species will be at various periods in the Spring and Summer months. The close period for each kind is not to exceed from six weeks to two months, and during this time fishing will be allowed about four days in a week, captures being absolutely prohibited for at least three days out of the seven. During the prohibited period it will be illegal to hold fish, or to offer them for sale, unless it can be proved that they were not taken under the forbidden conditions.

TENTH ANNUAL REPORT OF THE MASSACHUSETTS AGRICULTURAL COLLEGE.—The Tenth Annual Report of the Massachusets Agricultural College, presented in January of the present year, has just been published, and contains a considerable amount of matter of interest to agriculturists. Not the least important is the report on Commercial Fertilizers by Prof. Goessman, in which he takes into consideration the subject of fertilization, generally, in reference to the commercial fertilizers usually employed, and gives a sketch of the kinds recently introduced. He also presents the result of an analysis of a number of the fertilizers in use among the farmers of Massachusetts. In reference to stable manure, which is now the main fertilizer in ordinary farming operations, he states that its value depends more upon its influence upon the physical condition of the soil than in adding important constituents; and by a tabular statement of the ingredients he shows that, although the most complex of fertilizers, it can claim to possess this function only exceptionally, and that the permanent improvement of the soil depends almost entirely upon the introduction of other manures, whatever these may be; whether guanos, phosphates or other substances. According to Prof. Goessman, the use of any one mineral fertilizer is extremely inexpedient; sometimes because its per centage in such quantity may be highly injurious, and under any circumstances it involves an unnecessary waste of capital. A variety, therefore, should be sought for, in which some one ingredient or another may find its special application to any crop which may be cultivated.

The great number of artificial fertilizers now in market has induced the Professor to make a critical examination of the different kinds offered for competition; and as the farmer does not expect to pay for anything but phosphoric acid, nitrogen, and potassa, the valuation of the several articles has been based upon the proportion which they possess of these ingredients. A standard of prices has been lately recognized by dealers in Massachusetts, which allows 16.25 cents for each pound of soluble phosphoric acid, 6 cents for every pound of insoluble phosphoric acid, 30 cents for nitrogen, and 8 cents for potassa. Thus, while one fertilizer is valued by him at $54 91 per ton, another making equal claim to consideration is worth only $32 28; the Guanape guano is worth $91 61 per ton. As a general conclusion, he finds that the Guanape guano, although inferior to the average Peruvian guano, is, at its present price, the cheapest ammoniated phosphate in the market.

LIQUID CARBONIC ACID.—In the description by Thilorier of the properties of liquid carbonic acid, the conditions under which the experiments were performed are not given. The following are the principal results of an investigation, made by Cailletet, of the behavior of liquid carbonic acid at ordinary temperatures. The liquid is colorless, and very mobile; it is a non-conductor of electricity, and the current from three Bunsen cells will not pass through a film .002 of an inch thick. The sparks of an induction coil pass through without decomposing it, and are white and brilliant. The number obtained, in numerous experiments, for the coefficient of compressibility of the liquid was not constant, doubtless by reason of the unavoidable presence of non-condensable gases. Contrary to expectation, from its analogy to water, it does not dissolve common salt, sulphate of soda, nor chloride of calcium, and in contact with carbonate of potash it forms bicarbonate, which remains undissolved in the unabsorbed liquid. Carbonate of lime, as calc spar or dried chalk, is not attacked by it even after contact for an hour, and with a pressure varied between 20 and 40 atmospheres. Sulphur and phosporus are insoluble, in it, while iodine dissolves sparingly, imparting a pale violet tint. Water dissolves but little of it, the excess of the liquid acid floating upon the solution. Petroleum dissolves 5-6 volumes of the liquid, the first portions producing a marked striated appearance, as seen in mixing liquids of different densities. With a small quantity of petroleum saturation soon takes place, and the excess of acid floats on the top, with the surface of separation sharply defined. On diminishing the pressure, the carbonic acid becomes gaseous with violent rapidity; and it is only after it has all passed off, and the pressure has been considerably diminished, that the petroleum gives up the dissolved acid. Bisulphide of carbon mixes with it sparingly. Sulphuric ether absorbs large quantities, perhaps in all proportions. At 20 atmospheres, far below the point at which liquefaction begins, the gas entirely disappears, and during solution the striated appearance may be noticed. Unctuous oils dissolve sparingly in it. Tallow, under these circumstances, becomes white upon the surface and loses its oily portions. Stearin and paraffine are insoluble in it. Soda-amalgam had no reducing effect, and metallic sodium, after contact of more than an hour, was simply coated with a film of bicarbonate. The oxidation in the case was, however, due to the presence of a small quantity of moisture and not to the decomposition of the carbonic acid.

INDUSTRIAL PROGRESS.

The thickest armor plate yet rolled—14 inches—was recently tested in England.

Twelve locomotives, the first ever constructed there, are nearly completed at the railroad workshops, Sacramento, Cal.

Eminent chemists and physicians in Europe contemplate forming a pharmacopia adapted for general use in all European nations.

Patents have been taken out in France by two Boulogne engineers for a series of machines jointly invented by them, to manufacture every description of cask and barrel by machinery.

Steps are taken to have an exhibition of leather at Northampton, the principal place where the boot and shoe trade of England is carried on. American machinery will form part of the display.

The mining industry of Nevada was more productive in 1872 than in any former year, the value of the bullion produced being estimated at $25,550,000. The Comstock mines alone yielded $12,000,000 of that amount.

In the gold valued at $150,000,000 which is being gradually melted and coined in Germany, there are 193,194 ounces of American eagles and 273,159 ounces of gold Napoleons. The American eagles were obtained in England.

President Thiers has before him elaborate reports on the proposed treaties of commerce with Belgium and England; also a summary of the complaints made under the Empire with reference to the treaty of 1860. The cotton manufacturers, represented by M. Poyer-Quertier, stoutly demand further Protection.

An English newspaper having offered a prize of $500 for the best safety-valve, 26 designs were submitted from which one has been selected by two eminent engineers, although they observe, "it lands them in the apparent absurdity of approving a design which is in the scope of any tyro in engineering."

The highest and lowest price of ingot copper each year since 1863 has been as follows:

	Highest.	Lowest.		Highest.	Lowest.
1863	39	28½	1868	23½	21½
1864	55	39	1869	23½	21½
1865	50½	28	1870	22	21½
1866	42	26½	1871	27	22
1867	27	21½	1872	45	27

A cotton manufactory at Augusta, Ga., having become well established, is now extremely profitable, the dividend last year having been 56 per cent. All the operatives are Southern people, who do their work well and get good wages, and the only Northern man is the Superintendent. There are other manufactories equally successful. There should be many more, so that all the cloth needed in the South can be made at home.

The duplex system of telegraphy has been put into operation between Sheffield and Manchester, England, on a very busy circuit, with marked success. By this method, owing to an ingenious arrangement of the coils in the receiving apparatus, it is possible, and has been proved quite practicable, to send and receive any number of messages at the same time along one wire. There needs, however, to be some care exercised in making the "acknowledgment." The system seems best adapted for short circuits, such as the one indicated, which is something like 40 miles.

It may stimulate our capitalists to organize transatlantic steamship lines, and thus save the country millions of dollars, to observe the enhanced prices which the shares of British steamship companies realize—the best evidence of the success of these enterprises. The quotations are as follows, reduced to American gold:

	Paid.	Present Prices.
Pacific Steam Navigation Co.	$250	$350
General Steam Navigation Co.	70	150
National Steamship Co.	50	80
Peninsular and Oriental Steam Navigation Co.	250	265
Royal Mail Steamship Co.	300	450
Royal Mail Steamship Co.	100	140

NOTES ON EDUCATION.

Nashville has subscribed $75,000, in money and land, to the Vanderbilt University.

The Connecticut School of Design held, this week, its second annual exhibition, at Hartford. There were many pictures by natives, but most of the exhibition was composed of material from New-York.

Prof. Roehnig of Cornell is soon to issue a book entitled "The Shortest Road to German." It is said not to be intended to take the place of a formal grammar of the language, but is rather designed to supplement any good work of that nature.

The following changes have been made in the Latin text-books used by the St. Louis High Schools: Allen & Greenaugh's Latin Grammar, in place of Andrews & Stoddard's; Leighton's Latin Lessons, in place of Smith's Principia Latina; Allan's Latin Selections and Latin Composition in place of Hanson's Latin Prose Book and Arnold's Latin Prose Composition.

Mr. Thomas Spencer Baynes, Professor of Literature, Logic, and Metaphysics in the University of St. Andrews, author of an essay on "The New Analytic and Logical Forms," and translator of the Port Royal Logic, is engaged to edit an entirely new edition of the "Encyclopædia Britannica," which the publishers, Messrs. Adam and Charles Black of Edinburgh, contemplate issuing.

A Philadelphia newspaper says that the schools of that city do not stand as high as those of some other cities, and that this is owing to the inferior character of their teachers. This is explained, it declares, by the indifferent *personnel* of the School Boards, which are composed chiefly of either ignorant men or mere ward politicians, and also by the system of certificates, and the poor salaries that are paid.

The Bowdoin prizes at Harvard have been awarded as follows: A second prize for the best dissertation by a resident graduate, to C. L. B. Whitney; prizes for the best dissertation for the senior and junior class of 1872-3, to Eliot Lord of Plymouth and Charles T. Russell of Cambridge, both of '73; a prize for the best translation (for a translation into Attic prose), to A. C. Richardson of Boston. The Pi Eta oration and poem will be given in Massachusetts Hall, May 29, the former by W. M. Groton, the latter by J. C. Goodwin.

This is the language of *The Providence Press:* In our opinion the prevalent system of teaching the classics in America is very faulty. No language is ever learned in any true sense of that term, through its grammar. No man ever writes, speaks or reads a tongue with a recollection of all the grammatical rules to be observed. And it is folly to say that he first begins with a rule, and having thoroughly mastered it, forms a habit of obeying it, so that he can observe it unconsciously. We would like to see the man produced who learned to talk any tongue under the heavens in that way. Grammar is not the proper introduction to a language. Its function is altogether different. Its true use is to analyze that which we have already acquired, to trace up the process of thought which has already taken form. The true process of getting at a tongue is to begin with its words, then to begin putting them together. We ought to learn a foreign tongue just as we do a native one. In this way the difficulties of idiom are vanquished. By often hearing and using them, and not by studying their derivation, do we get command of them. In this way, too, each new word acquired brings a sense of increased power of progress. After we have learned to read Latin as readily as we do English and by a kindred process, then grammar might be taken up as an aid to reflection and to discipline our powers of analysis, or for purposes of comparative philology.

Do not Americans appreciate education? Here is a list of some of their benefactions: $1,300,000 by Mr. Simmons of Boston, for the industrial education of women; $1,000,000 by Daniel Drew, to endow a Theological Seminary, to which Abel Menand adds $100,000 more "for the education of women for the ministry;" $200,000 by Erastus Corning, for a Female College; $400,000 by Robert Barnes of Indiana, for the education of orphans in that State; $100,000 by Orange Judd, the agricultural book publisher, for Scientific Department in Wesleyan University; $60,000 by Cyrus McCormick (the reaper) for Theological Seminary at Chicago; $100,000 by Daniel Appleton (the book publisher) for chancellorship and library in New-York University; $100,000 by Nathaniel Thayer of Boston, to Harvard University; $100,000 by Chauncey Rose of Terre Haute, Indiana, for Female College; $100,000 by Henry Sage of Brooklyn, New-York, for female college building at Cornell University; $500,000 by Mr. Shaw of St. Louis, for park and botanic garden; $200,000 by Mr. Pardee of Pennsylvania, for Scientific Department of Lafayette College at Easton, Penn; $75,000 by Horace Sibley of Rochester, New-York, for a library building at Rochester University; $50,000 by the Rev. Jesse T. Peck to the new University at Syracuse, New-York, which has been increased by other citizens to a million and a half; $150,000 by Samuel Williston for educational purposes in Easthampton, Mass.; $250,000 by Capt. Richardson of San Francisco, Cal., to found the Richardson College in Chicago University; $60,000 by Edward Tompkins to found a chair of oriental languages in the University of California; $20,000 by Mr. Raymond of Oakland, to the College at Toledo, Ohio; $75,000 by Dr. B. H. Toland, to endow a medical department in the University of California; $100,000 in property and $50,000 in cash, by Mr. John Anderson of New-York, to found the Penikese School of Natural History.

BARON LIEBIG.

AN INTERESTING CONVERSATION WITH THE GREAT CHEMIST.

HIS OPINIONS CONCERNING BEER—THE ORIGIN OF "FLEISCH EXTRACT"—FEEDING PIGS ON MEAT AND COAL FLOUR—A MYSTERIOUS APPLICATION—AMERICAN APPLES—PROF. LIEBIG'S HORROR OF SPEECH-MAKING.

To the Editor of The Tribune.

SIR: The recent death of Prof. Liebig reminds me of a conversation which I had with him only about three months since at Munich, which can hardly fail to interest the readers of THE TRIBUNE. Some time previous, Prof. von Cotta, the eminent geologist, with whom I had been airing my sentiments about beer as a beverage pretty freely, had handed me a copy of the *Freiberger Anzeiger*, in which Prof. Liebig was reported to have expressed the opinion that beer was not only a healthful but necessary tonic, and that there was as yet no substitute for it, at least within reach of the poorer classes. It also spoke of the great deterioration in the quality of the Bavarian and of the superiority of the American beer, which he believed would soon be the finest in the world. I preserved this paper, and during my visit called the Baron's attention to it, asking him at the same time when and where and under what title he had published his views on this subject. He replied, after running his eye over the article, that he had not written anything upon the subject, but that in the course of a conversation he had once held with a correspondent of THE NEW-YORK TRIBUNE he had uttered substantially those opinions. I ventured to suggest in as indirect a manner as possible some of the more familiar objections to narcotics and the inconveniences which I always experienced from using them even in the form of beer. He said as for that, the narcotic element in a glass of beer or two was too inconsiderable to deserve notice. And then he went on to say that from time to time the system requires an alterative of some sort, and beer appears to answer this purpose as well as anything yet devised. A very curious and interesting illustration of this, he continued, had recently occurred within his own experience. Some 20 years ago the Baron had suggested the practicability of feeding Europe with the wild cattle of South America by extracting such of their qualities as were soluble in warm water. No practicable advantage was taken of this suggestion, however, till 1864, when a German of the name of Giebert came to him for instruction in the process by which the Baron promised to utilize the waste animal food of America, and with them he betook himself to Fray-Bentos, in the Province of Uruguay, and established a slaughter-house and factory of the now well-known Liebig's "Fleisch Extract," and which was in full operation in 1866. The rapidity with which the business developed may be inferred from the fact that during the last year, 1872, 78,000 head of cattle were used in the preparation of this extract, of which nearly, if not quite, 600,000 pounds comes annually to Europe. But in getting this amount of extract the Baron found there was an enormous waste of nutritive material. If, for example, a piece of meat is dried at the temperature of 110, it parts with 74 per cent of water, while only 26 per cent of dry substance remains to represent its nutritive properties; and 100 weight of meat in hot water gives 23 6-10 of insoluble material, and only 3 4-10 of material soluble in water and available for the Baron's purposes.

The insoluble part, constituting so much the larger portion, was usually burned up, or thrown into the river. A little was occasionally used for manure. The Baron was consulted about utilizing this refuse. He ordered a hundred weight sent to Munich, had it dried, ground into flour, and fed to pigs. It was of a gray color with a faint smell of Parmesan cheese, and proved, upon analysis, to yield far more fat and meat-producing properties than the vegetable and ground food usually fed to animals produced, three times more albumen than the grains, and above two and a half times more than the oilcake, with an equal amount of fat. The hogs ate it with avidity, and so did dogs and other animals, and in two months some of them doubled their weight. As soon as these facts were demonstrated they lost no time in increasing their stock of hogs and in providing corresponding supplies of the refuse from Fray-Benitos; but, after about a month, it was discovered that the pigs lost their appetite and declined a diet upon which they had so marvelously thriven. It was found that this food lacked certain salts which abound in ten times larger proportion in dried-out lean beef, and that a dog died very soon if fed on it exclusively. "Now what do you think I did," said the Baron, "to restore my pigs their appetites?" I gave it up, of course, and he went on: "I mixed powdered stone coal with their food. It restored their appetite at once, and now we are feeding an enormous quantity of hogs here entirely upon this refuse meat and coal powder, or, I should say, meat and coal flour."

The Baron did not explain the process of reasoning which led him, in the face and eyes of Scripture, to give his pigs stone when they asked for bread, but he admitted to me, what is I suppose sufficiently obvious to every one, that the action of the coal was purely dynamical. It is curious, by the way, to see how logical nature is, in spite of all the sophistries of civilization. Coals are only vegetables cooked over a very slow fire, and how natural, therefore, for the pigs to crave some vegetable food with their meat.

I was, of course, very much interested in this statement, more so than convinced of its bearing upon the proposition it was designed to illustrate. I did not see how it followed from the pigs desiring coal to aid them in digesting their meat pudding that "humans" required beer to digest theirs, nor why, if the cases were parallel, he did not prescribe beer to the pigs or coal to the humans. As the old lady said of the dictionary she had been reading, "I did not see the connection." However, I did not presume to debate the question with the Baron, who, I fancied, was not anxious to be held responsible for his thesis, but I could not resist the temptation to ask him if he drank much beer himself. He promptly replied, "Very rarely." I concluded to leave the question there, and when I should learn that the Baron had taken to drinking beer or eating coal, it would be time enough for me to revise my views of both as articles of diet for creatures in our stage of evolution.

I was accompanied by two of my children, and while talking he went to a closet and brought to us each a superb apple, asking me as he handed mine to me if I recognized it. Seeing that I did not quite understand the import of his question, he said, "Those are American apples. You have the best apples in the world in America; there is no doubt about it." I expressed my regret that a country that produced the best apples and gave the promise of soon producing the best beer in the world had not succeeded yet in tempting him to visit it, where I said I wished he would come, if only to see how well he was known there, and how sensible the whole nation would show itself to the value of his teachings. He replied that he had the greatest desire to see America, that he had been invited some ten years ago to visit us and lecture, but he declined, and now if he could persuade himself to go it would only be for the pleasure of seeing the country, not to lecture; he had dismissed all thought of such a thing from his mind. He was 70 years old, and could not think now of making such a journey. I made some remark about the facilities for traveling to America, the comfort and excellence of the steamers, &c. He said, "Yes, I know; the journey is no great matter, but your countrymen are all great orators, and if I went there they would require me to make speeches, and I have a horror of making a public speech. When I was in England I had to make two or three speeches, and the very thought of it made me sick two or three days beforehand. I can't make a speech in German, still less in English."

I hope the President of the Lotos Club and other presiding officers in America will see in this naive confession of Baron Liebig some of the evil consequences of forcing people to make speeches when they think they have nothing to say. A. B.

Konigsbrunn bei Konigstein, Saxony, May 5, 1873.

A SAD ENDING.

The melancholy death, in Worcester, Mass., of a Connecticut gentleman is mentioned, though his name is suppressed. Twelve years ago he was a young lawyer of great promise. During the Rebellion he enlisted; his military services were eminently satisfactory, but he became fond of spirits; and when, in 1865, he resigned he was "shanghaied" on board a ship bound for India, was wrecked off Cape Town, and lived a good while among the Hottentots and Dutch colonists. Finally he came home, sank to the bottom of society, kept a bar in Elizabeth, N. J., and died unregretted.

THE AMERICAN ORIENTAL SOCIETY.

TRIBUTES TO THE MEMORY OF PROF. HADLEY—PROGRESS OF THE PALESTINE EXPLORING EXPEDITION—PAPERS ON EASTERN LANGUAGES AND LITERATURE.

[FROM AN OCCASIONAL CORRESPONDENT OF THE TRIBUNE.]

BOSTON, May 22.—The American Oriental Society is rather a modest association, and when it comes to Boston to hold its annual meeting usually comes in by the back door and goes out in the same private way. Few besides the regular members of the Association knew that it was to hold its meeting in Boston yesterday. Yet there are very few societies of equal membership that can boast of better quality or more reserve power. If some method could only be devised to bring this power into action, the Society would be fortunate indeed. During the last year, it has sustained an irreparable loss in the death of its President, Prof. Hadley of Yale. It has lost several other active members. Perhaps to this, and the want of an adequate programme and preparation for the present yearly meeting, may be attributed the lack of a brisk and fruitful session. Nobody but one or two of the officers knew who was to read and what was to be read. The number of communications was very small, and the results of the meeting will hardly compare with the record of previous years.

By the kindness of the officers of the American Academy of Arts and Sciences, the Society met in their rooms at the Athenæum. Among those present were ex-President Woolsey of New-Haven, Prof. W. D. Whitney of Yale, the Rev. Rufus Anderson, D. D., Secretary of the American Board of Foreign Missions; the Rev. Joshua Ward of *The New-York Independent*, Prof. Ezra Abbott, LL. D., of Cambridge; Prof. Goodwin of Harvard, J. H. Trumbull of Hartford, who has made the American Indian languages a special study; Prof. E. J. Young, Hebrew Professor in Harvard; the Rev. Allen Hazen of India, Dr. Happin, and Dr. M. G. Clarke. The meeting was called to order by the Rev. Dr. Anderson, one of the Vice Presidents. A considerable portion of the morning session was spent in the election of officers and in minor business matters. The Treasurer's report showed a balance on hand of $906. The Librarian's report showed that important exchanges had been made with the Asiatic Society of Paris, and valuable gifts received from the American Board of Commissioners for Foreign Missions, with the complete publications of the London Philological Society. Some valuable Oriental books had also been received from the Rev. Mr. Waugh, missionary of the Methodist Board in India. The Publication Committee reported that the Journal will be ready for publication at the next general meeting. A committee, consisting of Prof. Goodwin, Dr. Ezra Abbott, and the Rev. Joshua Ward, was appointed to prepare resolutions on the death of Prof. Hadley. Appropriate remarks were made by Prof. Whitney, Prof. Goodwin, and ex-President Woolsey. President Woolsey paid a lofty tribute to the character of the deceased, with whom long association had rendered him so familiar. Alluding to Prof. Hadley's playfulness and sense of humor, he illustrated it by relating a college incident, in which the Professor disposed of a squeamish and bigoted parent. In the Junior Class, in college, there was a colored student who was a very good scholar, and distanced many of his white competitors. One day Prof. Hadley received a letter from the father of one of the students, saying it was extremely unpleasant for his son to sit by the colored student—the arrangement being alphabetical, and both their names beginning with B—and asked that his son might be relieved. Prof. Hadley replied that the members of the class were very soon to be arranged in three divisions, according to their standing, and that the difficulty which caused him so much trouble would then be obviated, as his son would go into the third division, while the colored student would go to the first.

The Rev. Joshua Ward of *The Independent* then gave the latest news from the Palestine Exploring Expedition. When last heard from, Lieut. Stevens and Prof. John W. Paine were exploring a region east of the Jordan. Having been detained much longer than they expected in Beyroût, they had improved their time in studying Arabic and searching for inscriptions in the vicinity, and were successful in finding three long and valuable Greek inscriptions never before known. Impressions were to be taken and sent to this country; also, impressions of certain inscriptions in Layard's book. By permission of the Turkish Governor at Beyrout, they were privileged to see the famous Hamoth inscriptions which are now exciting so much attention abroad. They are inscriptions not yet decipherable, in a language anterior to the Phœnician, partially hieroglyphic, and going back to the earliest period of the origin of writing.

The following officers were elected for the next year: President, E. E. Salisbury; Vice-Presidents, N. W. Clark, D. D., the Hon. Peter Parker, T. D. Woolsey; Treasurer, Addison Van Name; Corresponding Secretary and Librarian, Prof. W. D. Whitney; Secretary of Classical Section, Prof. W. W. Goodwin; Recording Secretary, Ezra Abbott. In the afternoon the chair was occupied by Prof. Goodwin. Prof. Whitney read a paper by Prof. John Avery of Grinnell, Iowa, on a comparison of the forms of the Sanscrit verb in the later classical literature, and also a paper by Dr. Easton of Hartford on the Vedic style. This paper was of much interest. Dr. Easton aims to discuss impartially the literary character of these Psalms, which have hitherto enjoyed much immunity from this species of criticism. Vedic scholars have hitherto concerned themselves with the relation of forms and words. A too favorable opinion, he thinks, has been entertained of their literary merits, and he makes Max Muller responsible for a good deal of this false opinion. For the most part, Dr. Easton thinks, these hymns are devoid of human inspiration as well as divine. Some of them arise to sublimity in the contemplation of the wonders of nature, but, for the most part, they are barren of interest and pervaded by a singular monotony.

Unity of aim and plan is not usually found. They consist of separate petitions and passages of praise and description strung together like beads on a string, there being nothing to prevent the transposition of any one of the verses to another place in the hymn in which it stands. If the whole collection were passed through a sieve for the purpose of rejecting all repetitious and parallel passages, the final remainder would be small. Dr. Easton notices the frequent recurrence of the epithet in the Vedic hymns and the Homeric poems, and finds a parallel to this in the ejaculatory character of much modern extemporaneous prayer. He assumes that the Vedic hymns are extemporaneous in their origin. Prof. Whitney remarked that it will be one of the important elements in the advanced stage of comprehension of the Vedic hymns to see how far there is present and conspicuous this element of repetition; to see how much of it is machine poetry, the grinding over of commonplaces which have been worked repeatedly by those who have gone before.

With a morning and afternoon session the Society was enabled to finish all its business, and then adjourned to meet in New-Haven on the 15th of October.

THE FARMERS' MOVEMENT IN ILLINOIS.

ITS INFLUENCE UPON THE OLD PARTIES—WHAT IT MAY ACCOMPLISH.

From The Chicago Tribune.

The State of Illinois has to elect, next month, some 28 Judges in as many districts for the Circuit Courts of the State. In two of the grand divisions of the State there are Judges of the Supreme Court to be elected. In several counties there are County Judges to be elected to fill vacancies. The entire Circuit Bench is to be refilled by election. A partisan Legislature labored for months to arrange these circuits, in order to secure the greatest possible number of judges of the true political faith. Nearly every judge now on the bench in Illinois was selected by a nominating convention, and elected because of his party politics. Yet in all Illinois there have been only four Republican conventions held to nominate candidates for Circuit Judge, and one of these, failing to agree, adjourned without making a nomination. There has not been courage enough in the two parties to call a convention to nominate a Republican candidate for Supreme Judge in a Republican district, or a Democratic Judge in a Democratic district.

The Republican party in Illinois has practically laid down its organization; it has abandoned that watchful care it once exercised over the Bench, and has left the gates wide open for Democrats, Independents, Copperheads, Liberals, Grangers, and all other discontented classes, to elect the thirty odd judges on the first Monday of June. The farmers' movement has paralyzed the Republican party in Illinois, and the paralysis promises to endure for some time. The movement is only in its infancy. Its interference in the election of judges is not by any means thorough. In many counties the organization is incomplete, and it was no part of the programme in the first instance to interfere with the courts. Farmers' nominations of candidates for judges are but an incident; the organization has further and more distinctive work before it. In November next there is to be elected in every county in this State a corps of county officers, including Treasurers, County Clerks, Surveyors, &c., which have heretofore been regarded as the exclusive spoils of party managers. The farmers' organizations will probably nominate their own men, and elect them to all these places, except in the larger cities. A year later, in 1874, they will have their organization so complete in every township that they will take the election of the 26 State Senators and the 153 Representatives in the Legislature into their own hands. We do not say that this is altogether desirable, but we look upon it as highly probable. They will also take into their own hands the election of members of Congress, and will select men not because of their advocacy of the Fifteenth Amendment, nor of their loyalty during the war, but because of their supposed fidelity to farmers' interests.

In the meantime, what will become of the Republican and Democratic parties? In the judgment of every true friend of reform, these parties have outlived their usefulness. Both are corrupt. The Republican party is the more corrupt of the two, by reason of its larger opportunities. If the Democratic party had equal opportunities, it would probably be more corrupt than the Republican, because its rank and file, in the Northern States at least, possess less intelligence. Both have reached a state where they ought to be overthrown and pulverized. If the farmers' movement shall give them the *coup de grace*, whether intentionally or otherwise, it will have taken the first step to a wider and more wholesome reform than its projectors intended.

THE CONGRESSIONAL TRIP

A RETROSPECTIVE GLANCE.

WHO WENT AND WHY THEY WENT—SEEING THE RESOURCES OF THE LAND—ON THE ATLANTIC AND PACIFIC RAILROAD—NATURAL RICHES OF THE COUNTRY—INTERESTING MINERAL EXHIBITIONS.

[FROM THE SPECIAL CORRESPONDENT OF THE TRIBUNE.]

NEW-ORLEANS, May 24.—Those who first conceived the idea of taking Congress on an excursion through Missouri, the Indian Territory, and Texas, were the railroad managers. The Convention at St. Louis, the visit to the Vulcan iron works, the inspection of Galveston harbor and the Passes of the Mississippi, were side-shows arranged to give the affair an air of business, and for the especial benefit of the cities which managed them. It would have been impossible to collect more than a corporal's guard of Congressmen from a distance, simply to listen to speeches by citizens of St. Louis upon her wants and those of Missouri. Kindly as the average Representative takes to free passes, free entertainment, and free whisky, there is not enough novelty in any or all of them to bring him from the Atlantic coast or the Mexican Gulf to St. Louis; and unless some other inducement had been offered, the St. Louis Convention could not have occurred. Why the railroad companies were so anxious, at such great expense, to take the national representatives over more than a thousand miles of country, feeding them at almost every station, and keeping up a constant flow of champagne between the stoppages, will be discovered before the history of the trip is completed.

The party that filled the seven Pullman cars as they started west from St. Louis, on the morning after the Convention adjourned, was a miscellaneous one. Pick up, almost at random, 75 members of Congress, and you may be pretty sure that you will have specimens of about every grade of American society—from the cultivated, high-toned, and eminently respectable statesman to the clown; and this party was no exception to the rule. The majority, however, were of that middle class, so many of whom are sent to Washington from all parts of the Union—men who are neither the best nor the worst in the districts where they live, and who I have often thought were selected for their want of positive convictions on every subject except their duty to "stand by the party" and never bolt a caucus. They hold the balance of power, particularly in the lower House of Congress, and are more skilled in "log-rolling" than in anything else. A few of the company (as many as might be counted on your fingers) were of the solid men of Congress. Such men as Senator Ramsey of Minnesota and Representatives Ward of New-Jersey, J. M. Wilson of Indiana, Burchard, Kasson, Niblack, and Sheldon, and a few others, are sure to profit by the excursion, and there is little danger that the plate glass of a Pullman car or the sparkle of St. Louis wine will prevent them from taking a calm, unbiased view of any question suggested by the trip that is likely in future to go to Washington for a solution. The clowns of the party came not from the South alone, nor from the North, nor were they entirely of the legislative order. They amused us sometimes as they held up a crab by one claw at the St. Charles dinner table "to see what kind of a varmint it was," bored us with half-drunken songs and the weakest and stalest of jokes, and disgusted us when they thronged disreputable places and returned too much intoxicated to keep out of the ditch. For the honor of the party, I am glad to say that, when compared with the whole number, this class was unusually small, and the presence of a dozen ladies served to keep even these few generally within the bounds of decency.

The Atlantic and Pacific Railroad extends from Franklin, thirty miles west of St. Louis, in a south-westerly direction to Vinita, a railroad town about forty miles over the border of the Indian country. From St. Louis to Franklin its trains run over the Missouri, Kansas and Texas road, which has been leased by the Atlantic and Pacific Company, and whose line it again crosses at Vinita. Central and south-western Missouri, since the opening of this railroad, is almost as well-known as Illinois, as far as its surface is concerned, though its hidden mineral wealth is but just beginning to be understood. The surface, east of the Ozark Mountains—those romantic hills which, in our boyhood, were surrounded with almost as much mystery as Irving has thrown about our own Catskills, but which, when seen, lose all their romance and turn out to be no mountains at all but insignificant hills—is generally broken and, except where here and there it has been cleared by the settler, mostly covered with trees. I noticed almost every northern tree, but the most prevalent was what is known in the South as "Black Jack"—larger than an eastern shrub-oak—and yet never attaining a size that will make it of much use as timber. The soil is of medium fertility—not as rich as the prairies, not so poor as the most of our Eastern lands. Wheat was the only crop we saw, and we were told that 20 bushels to an acre was an ordinary yield. The soil is also adapted to tobacco culture, and, indeed, looks stronger than that of the best tobacco regions of Virginia and North Carolina. Corn, oats, and rye grow well. The season has been backward in Missouri, as in almost every other part of the country, and much of the corn was not planted a week ago. Nearly all of our Northern fruits seem to thrive. The Atlantic and Pacific Railroad Company received from the United States the customary amount of land; in Missouri they had originally about 1,500,000 acres, of which they have sold between 200,000 and 300,000. Of that which remains, much, especially that lying west of the Ozarks, is capable of being converted into good farms.

But the great value of this part of Missouri is due not to its agricultural but to its mineral resources. It abounds in rich mines of iron, principally red hematite, though we saw some specular on its way to St. Louis. Coal, too, is very plentiful along some parts of the route, while west of the Ozarks I saw some of the richest lead and zinc ores in the country. Much of the lead is crystallized in cubes, some of them several inches across and so pure that it could be cut with a pen-knife like the metal. The zinc ore is found in the same or immediately adjoining strata of rock, and yields upward of 60 per cent of pure metal. It is only recently that the zinc has been saved; but its value has already been proved. From a pile of the ore lying at one of the stations, many of the passengers brought away a number of fine specimens. On a branch road of the Atlantic and Pacific, in the south-western part of the State, are some of the best copper mines of Missouri, and near Neosho are the newly-discovered tripoli mines. We did not visit either of these, but were shown some very fine specimens of their products. I shall not attempt to give any statistics of the mining wealth of the portion of Missouri through which we passed; they are accessible to all in the reports of official surveys and in the circulars that have been issued by the railroad companies, and no one can pass through the country, no matter how rapidly, without being impressed with the notion that Missouri is to become, and that before many years, the Pennsylvania of the West.

The owners of the Atlantic and Pacific Railroad assert that it is the best constructed line between the Mississippi River and the Rocky Mountains. It is certainly well built, laid with good iron, and substantially ballasted, part of the way with rock. The management of the road seems to be very efficient. The scenery along the line of the road from St. Louis to the Indian Territory is not striking. From the summit of the Ozark Mountains, which rise to a hight of only about 1,400 feet, a fine view of rounded hill-tops is obtained, but it does not compare in grandeur or romantic beauty with the views obtained from car or stage-coach while crossing the Alleghanies at almost any point frequented by travelers. The first really attractive country lies west of the Ozarks, where the soil becomes richer and the climate milder as you approach the Indian Territory. In the midst of this warm, rich land are the towns of Springfield and Neosho, the former of which has grown in forty years from an isolated trading-post to be a thriving town of several thousand people. Lying just on the edge of the cotton belt, and in the midst of a rich grain and fruit producing region, it has a considerable wholesale trade, shipping the crops east over the railroad and supplying a large back country with eastern goods. From what we saw of the place and its people, we discovered none of that sluggish indolence that marks too many Southern communities, but the residents, the majority of whom have come from the North-Western States, seem to have retained that enterprise and thrift that marked them at home.

The horse disease, after taking its long march from Canada, south to the Gulf and west to the Pacific, spent its fury only when it had no more horses to conquer. It is no longer to be classed as an epidemic, but as an hereditary complaint. In Iowa, colts as soon as foaled, show all the symptoms of the horse disease, and are dying in large numbers, sixty deaths being reported as having occurred in one township.

There was a row on the Hamilton and Dayton Railroad the other day. Mr. Isaac W. Jones, a New-York merchant, asked a conductor for a lay-over ticket at a way station, and was told that his check would be sufficient. On presenting it to the conductor the next day or so, he was told that it was worthless, and that he would have to pay or be ejected. Pay he wouldn't; the ejectment was attempted—the conductor and brakemen on one side, and Jones and the other passengers on the other. Seats were broken and windows smashed, but the Jones party triumphed and Jones remained. He now sues the company — damages laid at $5,000.